## WHY INSULATE? WHY RENOVATE? WITH MINERAL WOOL INSULATION





Insulation is a 'win-win' for people, business, government and the planet alike!

We spend nearly **90% of our lives** indoors, so it's essential that our **buildings** and **homes** are **comfortable**, **safe**, **healthy**, **stressfree**, and **affordable** to maintain.

An insulated building is a better-quality building in every respect.

Insulation provides **thermal comfort**, **saves money** by cutting energy costs and creates **healthier environments**. The benefits of **insulation** can be enjoyed for generations to come.

When the energy **renovation of buildings** is scaled up — from individual buildings to **millions** of buildings — the **whole of society wins**, through the many ancillary benefits like  $CO_2$  emissions reduction, job creation and better overall living conditions.

For every  $\leq 1$  million invested in energy renovation of buildings, an average of 18 jobs are created in the EU. These are local, longterm jobs that will stimulate economic activity across Europe<sup>2</sup>.





**75%**<sup>2</sup>

of EU buildings were built with minimal or no energy-related requirements, offering massive potential to make a difference with insulation and renovation





buildings are responsible for 40% of energy consumption and 38% of total CO<sub>2</sub> emissions in the EU. Renovate them to be more energy efficient and the gains will be enormous



a 50% reduction in energy use in the European building stock would reduce CO<sub>2</sub> emissions by 18% by 2030



highly efficient buildings can reduce energy demand and peak loads by 57 GW and cut capital cost requirements in power sector between 89-153€ billion all by 2050



1%

new buildings account for less than 1% of the entire buildings stock every year. New builds are more energy efficient than old, but they will not change the energy efficient landscape as quickly as renovation



1.2%

is the existing renovation rate per year in the EU



**2.5%**<sup>®</sup>

should be the minimum renovation rate per year in the EU

### WHY SHOULD WE INSULATE OUR HOMES?

Insulation is an **essential part of the Building Envelope**, securely separating the interior of dwellings from the outdoor environment constraining the movement of heat, moisture, air and noise.

Insulation stabilizes indoor temperatures and helps to better **preserve buildings for longer periods of time**.

Proper insulation can reduce household energy needs by 70%<sup>9</sup>.

Insulation works as a barrier to heat and cold keeping out unwanted heat in the summer while retaining precious warmth in the winter.

One letter improvement in the energy class of a building through insulation, leads to an **increase in property value** of between  $0.5\% - 10.5\%^{10}$ .

A well-insulated home provides a **healthy indoor environment** without cold surfaces and risk of mould.

Insulated homes are critical to the living conditions of Europe's population especially for the vulnerable and elderly.

Insulation **reduces the amount of external noise**, allowing for a quiet, peaceful living environment, in particular this is the case of Mineral Wool.

Insulation has a "fit-and-forget" benefit as it requires **little to no maintenance** and/or replacement once well-installed.



## MINERAL WOOL INSULATION MATTERS TO YOU



A direct **positive effect** on **health** and **wellbeing** results from insulation. Improving indoor and outdoor air quality with insulation provides **enormous savings to society**; both in terms of health and life expectancy, an annual EU gain of 70,000<sup>th</sup> life years can be achieved by reducing emissions. In addition, related economic savings amount to at least 6.64€ billion/year across the EU<sup>2</sup>.

**Mineral wool insulation** in particular, transforms people's lives by **making buildings better places** in which to live — whatever the climate — by making it **easier** to keep a **home warmer** or **cooler** for longer. Building quality is built on comfort. Insulation creates comfort zones that allow everyone — particularly the young, old and vulnerable — to flourish in healthier environments.

Mineral wool insulation provides warmth by preventing heat loss, providing **comfortable indoor temperatures** and **reducing stress-inducing noise pollution**.



## 70.000 ANNUAL

GAIN OF LIFE YEARS THROUGH REDUCED EMISSIONS



## MINERAL WOOL INSULATION MATTERS TO YOU



**Noise pollution** is a major environmental health problem in Europe. The EEA estimates that traffic noise directly affects the lifes of **125 million**<sup>13</sup> **Europeans**, and probably yourself!

The sleep of 8 million Europeans is of lesser quality because of exposure to too high noise levels. Environmental **noise is linked** to approximately **43,000 hospital admissions**, **900,000 cases** of **hypertension** and up to **10,000 premature deaths per year**. The European Commission estimates the **social cost** of rail and road traffic noise in the EU as being **40€ billion per year**<sup>14</sup>.

**Mineral wool insulation** provides a highly **effective barrier to noise**. That is because the structure of the fibres in glass and stone wool significantly dampens sound. There is a range of mineral wool products which help to better manage sound, these products are used in all kinds of settings – from offices, public buildings and homes through to hospitals, laboratories and industrial facilities.



## 125 MILLION EUROPEANS AFFECTED BY NOISE



10,000 PREMATURE DEATHS PER YEAR

## MINERAL WOOL INSULATION MATTERS TO YOU



Insulation unlocks massive long-term **financial benefits and is cost effective** by cutting energy bills.

Heating a home is now one of the largest household costs and the best way to reduce bills is with a more efficient, **better insulated home**.

How much you can save depends on e.g. the **size of your home** and the **type of insulation** you install.



### **INSULATION SAVES UP TO<sup>15</sup>**

## A YEAR FOR AN INEFFICIENT HOUSE (300KWH/M<sup>2</sup>/YEAR)

A YEAR FOR AN AVERAGE HOUSE (150KWH/M<sup>2</sup>/YEAR)

A YEAR FOR A PASSIVE HOUSE (ISKWH/M<sup>2</sup>/YEAR)

## MINERAL WOOL INSULATION MATTERS TO YOU



By **building sensibly** using adequate fire protection materials, the **risk of fire** can be **significantly reduced**.

Taking one single year in Germany as example, fire damage costs to the insurance industry was estimated at around 6€ billion<sup>16</sup>. **Buildings** as well as **their contents contribute** to the **spread of fire**.

Mineral Wool insulation contributes to **safer buildings**. In fact, mineral wool insulation **acts as a fire barrier**, slowing down house fires and giving the emergency services extra time due to its qualities which delay fire spread; this **helps save lives**, **money** and **property** and keep pollution to a minimum.



## 6€ BILLION

INSURANCE FIRE DAMAGE COSTS PER YEAR FOR GERMANY ALONE

## MINERAL WOOL INSULATION MATTERS TO SOCIETY



In order to **assess the environmental impact** of a product, each of its positive and negative **contributions** on the **environment** from "cradle-to-grave" must be **carefully valued**. **Mineral wool producers** are **committed** to **LCAs** and the use of related Environmental Product Declarations (**EPDs**).

Over the 50-year lifetime of a home, **mineral wool** insulation can **save more than 200 times**<sup>17</sup> the  $CO_2$  emissions that are **generated during** its **manufacture**, transportation, installation and **disposal**.

This is based on the **Eurima mineral wool LCA calculations**, which compares the **environmental impacts and savings** during the **life-cycle** of mineral wool products in a **standard building** (located in Strasbourg, France).

As it can be clearly seen, the negative **impact during production** and **construction stages** is overwhelmingly **compensated by** the **positive impact** of the **energy savings** during the **use phase**. This is calculated for all LCA indicators and especially striking for Global Warming Potential, Primary Energy Use, and Ozone Depletion Potential.



#### Ratios for energy related environmental impact indicators<sup>18</sup>



## WHY SHOULD WE RENOVATE OUR HOMES?

New buildings only account for 1% of the entire building stock in Europe every year! This means that **Europe's largest untapped energy source** are **existing buildings**!

**75%** of EU buildings<sup>19</sup> were built with **minimal or no energy related requirements** offering **massive potential** to make a difference.

The EU's **Renovation Wave Strategy** has the potential to **create** an additional **160.000 jobs** in the construction sector **by 2030**<sup>20</sup>.

**Every 1** $\in$  spent on thermal renovation in the EU saves 42 cents in public health expenditure.<sup>21</sup>

**Increasing** the **rate and depth of renovation** in line with the EU's Renovation Wave Strategy will lead to a **60% reduction in CO<sub>2</sub> emitted** from buildings.<sup>22</sup>

The most effective way to **tackle energy poverty** is **through renovation** and **insulation**!

For every 1% improvement in energy efficiency in Europe, EU gas imports drop by 2.6%<sup>23</sup> with the existing building stock as main contributor.







IMPROVING PUBLIC HEALTH



TACKLING CLIMATE CHANGE



4

CREATING LOCAL JOBS

> IN 2015 THE EU RENOVATION MARKET WAS ESTIMATED AT



17

### RENOVATION MATTERS TO SOCIETY



When **energy renovation** and **insulation** are scaled up they **drive economic growth** and **job creation**.

For every €1 million invested in energy renovation of buildings, an average of 18 jobs are created in the EU. These are local, long-term jobs that will stimulate economic activity across Europe.

**In cities** alone, **investments in residential energy renovation** to meet the goals of the Paris Agreement **would create 5.4 million urban jobs** worldwide<sup>24</sup>.

At least **50%** of the **value-added** of the building sector is generated by work on the **building envelope**.

The greater depth of renovation required to meet EU energy and climate objectives means that demand for highly skilled construction workers is set to rise exponentially.



## **18 JOBS** FOR EVERY *€*I MILLION INVESTED IN RENOVATION

## 5.4 MILLION URBAN JOBS

TO BE CREATED GLOBALLY

## RENOVATION MATTERS TO SOCIETY



A total of **197**<sup>28</sup> **countries** agreed to deliver a **below 2°C** in order to **tackle climate change** at the Conference of Parties in Paris (COP) in 2015.

How can they boost that? **Energy efficient renovation** involving the **insulation of existing buildings** is the **key to success**. In the EU, buildings consume **40% of final energy** and are responsible for **36%** of our **greenhouse gases**<sup>29</sup>.

Insulating the **75%** of EU **buildings which are still inefficient**, could **reduce** CO<sub>2</sub> **emissions** by **204 million tonnes** per year<sup>30</sup>; the equivalent of 43 million cars being taken off the road for one year<sup>31</sup>.





#### BUILDINGS HAVE THE BIGGEST POTENTIAL IN EMISSIONS REDUCTION



http://publications.wri.org/buildingefficiency/

WORLD RESOURCES INSTITUTE

## RENOVATION MATTERS TO SOCIETY



**Highly efficient buildings** would transform our energy landscape by **reducing peak demand** and improving the integration of renewable energy and smart technologies.

By **renovating** and **insulating** the **75% of our buildings** which are **inefficient**, peak demand for **electricity could be cut by 57GW by 2050**<sup>32</sup> — equal to the current total electricity production capacity of the Netherlands and Austria.







WITH HIGH EFFICIENCY, ESTABLISHED TECH = LOW OR NO ADDITIONAL COST



Note: Size of circles represents relative investment cost.

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WORLD RESOURCES INSTITUTE

## RENOVATION MATTERS TO SOCIETY



**Over 50 million Europeans** or 10% of the EU population<sup>33</sup> suffer from **fuel poverty**. The **three top reasons** for this are a **poor building envelope with little insulation**, **high energy prices** and **low income**.

The result of **fuel poverty** is that **6.9% of the EU population** said that they **cannot afford to heat their home** sufficiently in a 2019 survey. **In some EU countries**, this figure **exceeded 30%**.<sup>34</sup>

Heating and cooling can amount to 16% of EU consumers' bills, renovation and insulating properly can save up to 70% of heating<sup>35</sup> needs.



## OVER 50 MILLION

EUROPEANS SUFFER FROM FUEL POVERTY

# of EU CONSUMERS' BILL IS FOR HEATING & COOLING

of heating needs saved, if insulating properly

## RENOVATION MATTERS TO SOCIETY



For every **1% improvement** in **energy efficiency** across Europe, EU **gas imports drop** by **2.6%**.<sup>∞</sup>

We import 53% of our energy<sup>37</sup>, costing us 1 billion/day.

**Buildings** use 61% of all imported gas<sup>38</sup> and an **energy renovation programme** across Europe **could reduce** the sector's **energy imports** by over 60% by 2030 and 100% by 2050.<sup>39</sup>



## of all imported gas is used in buildings

IE BILLION/DAY IS THE COST OF ENERGY IMPORTS

> 100% REDUCTION IN GAS IMPORTS BY 2050

## RENOVATION MATTERS TO SOCIETY



The human cost of living in inadequate buildings is staggering. For example, the total societal cost of having people live in existing 'unimproved' housing is estimated at 194€ billion.<sup>40</sup>

Studies carried out in different countries show that for every 1€ invested in the thermal renovation of buildings, a saving of 42 cents is achieved on health costs.<sup>44</sup>

**Children** in cold buildings are more likely to have respiratory problems. There are also clear links between **cold housing** and **excess winter deaths** among the **elderly**. **Renovating with insulation** contributes significantly to **creating warmer buildings**.





## 194 E BILLION

TOTAL COST OF SOCIETAL HEALTHCARE SAVINGS

EVERY IE Invested saves 42 CENTS

## NZEB BUILDING STOCK: A VISION FOR EUROPE

**Did you know** that **all new buildings** have to be **Nearly Zero-Energy Buildings** (NZEBs) **as of 1 January 2021?** This is a **requirement** of the Energy Performance of Buildings Directive (**EPBD**). NZEBs have very high-energy performance.

However, there is **no clear plan for** dealing with the **buildings and homes** that **we already have**. What **we need** is a plan that is seen as doable by Member States, provide business and building owners with certainty and that brings **confidence** to the **construction market**.

A solution would be to extend the known NZEB principle to existing buildings, and setting a realistic timeframe to 2050. Insulating the building envelope is a prerequisite for the transition to NZEBs.

THE BUILDING SECTOR TURNOVER IN THE EU 28 IN 2013, THIS IS THE EQUIVALENT TO MORE THAN 9% OF THE

EU'S GDP THAT YEAR42



Once a **building** has been transformed by **renovation** it can be left alone to get on with its job of **saving energy**. An energy efficient building envelope is easy to run for anyone — owner or tenant — there is no need to change their habits. High levels of energysaving performance can be achieved with energy renovation of buildings.

A resilient **smart building** begins with a high **performing** building **envelope**. Mineral wool insulation provides that start. An energy efficient renovated building requires little to no ongoing maintenance. Even better, its trouble-free benefits are enjoyed for decades.

## THE WAY FORWARD



#### EDUCATE

Too often people take insulation for granted, they only notice when it's not there. **People need to be informed**, when **buying** or **renovating a building**, how insulation will improve their lives and how to proceed from the decision to renovate to enjoying a **warmer** and more **cost-efficient building**.



#### REGULATE

Renovation can only thrive with an ambitious long-term vision to make Europe's building stock Nearly Zero Energy by 2050 helped by milestones along the way and robust regulatory drivers, such as minimum energy performance standards (MEPS). Energy and climate policy must enshrine the principle of Trias Energetica, also known as the energy efficiency first principle.



### FACILITATE

Public authorities need to facilitate renovation by incentivising improvements, providing assistance and information, enabling workforce training and securing a stable investment climate. **Renovating** the **existing** building stock to NZEB level **by 2050**.

Strengthening key enablers for building renovation such as Energy Performance Certificates (EPCs).

IR

Ensuring that the EPBD revision is coherent, consistent and mutually reinforcing with other initiatives in the European Green Deal.

Introducing MEPS for existing buildings and a deep renovation standard at the level of at least 60% energy savings. Unlocking financial bottlenecks for investment and using ETS revenues to finance building renovation.

## REFERENCES

- <sup>1.26,42</sup> OpenExp, 2016. Energy Transition of the EU Building Stock Unleashing the 4<sup>th</sup> Industrial Revolution in Europe. By Yamina SAHEB
- <sup>2.</sup>BPIE (2020), Building Renovation: A kick-starter for the EU recovery https://www.renovate-europe.eu/wp-content/uploads/2020/06/BPIE-Research-Layout FINALPDF 08.06.pdf
- <sup>19, 23, 36, 37</sup> COM(2015) 80 final A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy
- <sup>3</sup> JRC, 2015. Energy Renovation: The Trump Card for the New Start for Europe
- <sup>4</sup> https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings (derivate from EC figures)
- <sup>5, 32</sup> Ecofys, 2015. The role of energy efficient buildings in the EUs future power system
- <sup>6</sup> Investing in energy efficiency in Europe's buildings A view from the construction and real estate sectors (Economist Intelligence Unit 2003)
- <sup>7,33</sup> COM(2016) 51 final An EU Strategy on Heating and Cooling
- <sup>8</sup> Ecofys Postion Paper A heating & cooling strategy for the European building sector until 2050
- <sup>9, 35</sup> JRC, 2016. Synthesis Report on the National Plans for Nearly Zero Energy Buildings (NZEBs)

<sup>10</sup> BPIE, 2015

- <sup>11</sup> http://lodel.irevues.inist.fr/pollution-atmospherique/index.php?id=4780
- <sup>12</sup> Modeled effects of an improved building insulation scenario in Europe on air pollution, health and societal costs
- 13, 14 EEA Report: Noise in Europe 2014
- <sup>15</sup> http://oilprice.com/Latest-Energy-News/World-News/How-Much-Money-Could-a-Well-Insulated-House-Save-You.html
- <sup>16</sup> VFDB German Fire Protection Association
- <sup>17, 18</sup> Eurima mineral wool LCA calculations in a standard building (located in Strasbourg, France)
- <sup>20</sup> European Committee of the Regions (2021) Financing the Renovation Wave: boosting jobs and energy savings in the EU https://cor.europa.eu/en/news/Pages/Financing-the-Renovation-Wave.aspx
- <sup>21.</sup> WHO Regional Office for Europe, OECD (2015). Economic cost of the health impact of air pollution in Europe: Clean air, health and wealth
- <sup>22</sup> European Commission (2020), A Renovation Wave for Europe greening our buildings, creating jobs, improving lives
- <sup>24</sup> C40 Cities (2018) Climate Opportunity: more jobs; better health; liveable cities. https://www.c40.org/researches/climate-opportunity-more-jobs-better-health

28 UNFCC

- <sup>29</sup> https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings
- <sup>30</sup> At an oil price of 40 dollars a barrel
- <sup>31</sup> https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator
- <sup>34</sup> European Commission (2021) Can you afford to heat your home? https://ec.europa.eu/info/news/can-you-afford-heat-your-home-2021-jan-07 en
- <sup>38</sup> JRC,2015.Securing Energy Efficiency to Secure the Energy Union
- <sup>39</sup> Ecofys, 2014. Deep renovation of buildings An effective way to decrease Europe's energy import dependency
- 40 http://www.housingeurope.eu/resource-732/building-the-future-of-health
- <sup>41</sup> European Commission

Purpose: The present information note was prepared by Eurima and is intended as a tool among others to help policy makers understand the benefits of insulation and renovation. It is for general information purposes only.

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